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With the respectful Compliments  
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# CHOLERA AND QUARANTINE.

(Read at the Indian Medical Congress, 1894.)

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BY

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*Surgeon-Captain, I. M. S.*



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# CHOLERA AND QUARANTINE.

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QUARANTINE was originally derived from the Italian word *quaranta*, forty: meaning a forty days' detention or isolation for the prevention of spread of an epidemic disease. [It has been defined as—"The enforced isolation of individuals and certain objects, coming, whether by sea or by land, from the place where dangerous communicable disease is presumably or actually present, with a view of limiting the spread of the malady. The objects liable to quarantine include—on the assumption of their being apt to carry the contagion or infection of the disease—the luggage and personal effects of the individuals isolated, certain articles of merchandise, and ships; and, inland quarantine, carriages and other vehicles. Sometimes entire communities and districts are subjected to quarantine. Ordinarily, the word *Quarantine* is colloquially employed to designate any restrictive or detentive measures taken at frontiers or ports of entry, &c., to arrest contagion by land or sea. *Quarantine* may be divided into I *Maritime*, II *Land*. It may, further, for practical purposes, be classified into—

(1) *Ancient Quarantine*.—Meaning the unconditional arrest and detention of all vessels or individuals arriving from any infected locality, until, within a minimum of forty days or less, the presence or absence of the disease was proved by lapse of time.

(2) *Limited or Rational Quarantine*.—The examination conducted to ascertain the presence or absence of causes of communicable disease, without detention for more

time than is necessary to the discovery and the destruction or removal of such causes.\*

(3) *Medical Inspection*.—The medical inspection of vessels, railway trains, &c., or individuals coming from an infected locality, without detention of “healthy” persons, vessels, &c.

“*Infected ships*,” &c. (with a case on board or with fresh cases during preceding seven days), are to submit to (a) disembarking and isolation of the sick; (b) the others to remain “under observation” not exceeding five days, and (c) disinfection of passengers’ property as well as the ship, train, &c.; (d) emptying of water tanks and pumping out bilge-water after disinfection; and (e) delayed disembarkation of crew.

“*Suspected ships*, &c.” (having had cases, but with none during the last seven days) are to submit to (a) medical inspection, (b) disinfection, (c) substitution of good drinking water for stored supply, and (d) pumping bilges dry; the last two before entering dock.

In England the “observation” is carried out in the homes of the persons concerned, notification for same being conveyed to the local sanitary authority: pauper aliens and persons from infected ports, who are either filthy or unwholesome, are prohibited from landing. (Orders of Local Government Board, 6th September 1892.)

The above is more or less the substance of the agreements drawn up by the International Conference on Cholera Quarantine at Dresden in 1893. Into the relative merits of each class there will be no need to enter. I shall confine myself to briefly offering a few suggestions on land quarantine, as we become acquaint-

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\* See *Australasian Maritime Quarantine: its theory and practice*, Dr. Ashburton-Thomson, Government Delegate, New South Wales: Trans. Int. Cong. Hyg., London, 1891, Vol. 1, page 50.

ed with it in India in its particular application against the visitation of that much dreaded disease—Cholera.

In spite of the advancement of science, the propagation of cholera is still enigmatical. It is true we do not now regard the skies for portents and signs, but rather seek them on the earth. We have thus now come to regard atmospheric “waves” as mythical, and are asked to pin our faith alone on the “comma bacillus” of KOCH. But instances still arise to question the wisdom of such absolute dogmatic teachings. *Ipsa dixit pronunciamientos* cannot stifle enquiry or answer objections wherever legitimate, or if they suffocate them, it will be to the discouragement of science and to the postponement of accurate knowledge that is necessary for the suppression of epidemics, and thus for the advancement of the happiness of mankind. Now, one of the very mysterious things that puzzle the sanitarian is the periodical extraordinary and rapid progression into wide areas, from ordinarily localised or it may be isolated centres, of such diseases as influenza and cholera, in epidemic, or still more, pandemic form. Previous to the year 1817, cholera, though known apparently from the time of Hippocrates, was comparatively a mild disease, as the history of the Portuguese, French and old English settlers in India have shewn, and any epidemics that occurred were of a very localised character. India for centuries has been famous for her enormous gatherings of pilgrims at the several sacred shrines of Muttra, Benares, Jagarnath and Hardwar: and yet we do not hear of epidemics. And although, besides this, the plains and mountains of Hindustan, Afganistan and Persia have been the theatre of perpetual war, and vast armies under terrible and plague-inviting conditions, unknown now-a-days, have massed and traversed the land from end to end under Maharatta, Rajput, or Mahomedan conquerors, history appears to be absolutely silent as to any such terror-inspiring scourge as must have simply devastated or annihilated many of them had it occurred, and spread havoc far beyond the con-

lines of India in their lines of communication. Cholera in its modern virulent epidemic form was, therefore, practically unknown until the 20th August of the year 1817, when it appears to have suddenly taken its rise in the Town of Jessore, 76 miles east of Calcutta, whence it rapidly spread (just as in later pandemics) westwards through Calcutta, up the Gangetic Valley, decimating the army of the Marquis of Hastings then operating against Scindia in Central India, and thereafter traversing, during the six years of its prevalence, half the civilized globe, including England. Since then six more cholera pandemics have ravaged the world. How did this first one arise? And why? And why should it sweep the earth as it did? And in days when human intercourse beyond India, and between it and Europe, was no better than it was before, or for many years after? Again, as Surgeon-Major DUKA, I. M. S., pointed out at Budapest, the other day: if human intercourse alone is the cause of spread, how do we explain the almost endemic and persistent prevalence of cholera near Paris in 1892, and its non-extension to England with every facility for its spread in that direction by sea traffic?

In the recent pandemic still progressing in Europe, can we say that the rapidity of spread can be satisfactorily accounted for by what we know of the life history of KOCH's bacillus? Its incubation, its rapidity of multiplication, and so on? And what are we then to think of those very numerous cases where the "comma bacillus" exists abundantly without producing cholera? And where cholera has been produced without its presence at all? Thus RUMPF in Hamburg, LESAGE and MACAIGNE of the *Institut Pasteur*, METSCHINKOFF, LUBERSCH and others, are quoted as having proved that true Asiatic cholera occurs without the comma bacillus; and the negative experiments of PETENKOFFER, EMMERICH, STRICKER of Vienna, HASTERLICK and KLEIN that the comma bacillus may be toxic, but there is still no POSITIVE evidence that it pro-



duces cholera.\* KLEIN has written a book† to prove this, and since then has shewn (*Indian Medical Gazette*, May 1893) that similar toxic symptoms are producible, and similar immunity imparted, by the typhoid bacillus of GAFFKEY and EBERTH, the bacillus coli communis and others. That choleraic symptoms are not solely characteristic of Asiatic cholera is, I presume, well known. English cholera and ptomaine poisoning from various causes (bad fruit, flesh, fish, rice and so on) are examples. In the year 1887, in Bristol, England, I attended a case with typical symptoms of cholera. I never saw stools more typical, and the only probable cause was unwholesome cheese. There was no cholera in Europe that year. Again, in May 1889, in Allahabad, a few hours after my assuming charge of the 13th B. L. I., I attended a native officer suffering from typical cholera symptoms, cramps, thirst, suppressed urine, vomiting, rice water stools and collapse, &c., rapidly ending fatally. Although the regiment had only a week before returned from their cholera camp, where they had been sent on account of cases having appeared among them, my suspicions were aroused, and the *post-mortem* satisfied me that he had been poisoned with arsenic, and this the chemical examiner soon confirmed. This case suggests great watchfulness during times of epidemic scare, for I suspect such poisonings are more common than is usually believed.

Mr. ERNEST HART claims, with great reason, to have established on an overwhelming basis of evidence, collected from every part of Europe, the dicta founded by SNOW and SIMON on the British epidemics of 1848 and 1854, and by himself and RADCLIFFE on the East End London epidemic of 1866:—

(1). That cholera is a filth disease carried by dirty people to dirty places, and diffused by specially poisoned water.

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\* Presidential address, Tropical Section, Int. Cong. Hyg., 1894.

† The Bacteria in Asiatic Cholera, 1889.



(2). That you may eat cholera and drink cholera, but you cannot catch cholera.

(3). That cholera may be considered for all practical purposes as an exclusively water-carried disease, and that it is carried only by water poisoned by human discharges.\*

Now these are factors that nobody can scarcely deny, the proofs being overwhelming. But yet though the truth, in my humble opinion, they are not the whole truth. Surgeon-General J. M. CUNNINGHAM has traversed them and denied them. But I think that it is important to recognise that although cholera is, in the vast majority of cases, a "water-borne," water-communicable disease, yet it is *not always so—not invariably so*—instances to the contrary cannot, I think, be gainsaid.

Dr. LAWSON, Inspector-General of Hospitals, at the London Congress in 1891, drew attention to the fact that there are now no inconsiderable number of instances of well-marked epidemics having sprung up in limited localities at a long distance from where the disease was already prevailing and among persons who had not been absent from the locality for months, *without it having been possible for them to have had personal communication, either direct or indirect, with any one already affected*, and he instances the investigations by Dr. PARKES at Southampton in 1856; by Mr. RADCLIFFE at Theydon Bois, Essex, in same year; by Board of Health in New Orleans in 1873; by Mr. FAUVEL and Drs. BROURDEL, PROUST and others at Toulon and Marseilles in 1883. *In none of these was there any trace of communication by the sick or by fomites*;† and Dr. LAWSON concludes that "the efficient cause of the epidemic of malignant cholera can be conveyed to localities a great distance from where it is already

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\* Cholera nurseries and their suppression: Cong. British Institute of Public Health, Edinburgh, *B. M. J.*, 5th August 1893.

† Notes on the transmission of cholera. Trans. Int. Cong. Hyg., 1891, Vol. I, page 44 *et seq.*

prevailing, in sufficient quantity to generate an epidemic without being carried by man or fomites.”\*

Again, at the recent International Congress at Budapesth, Dr. CLEMOW, who has investigated this subject in relation to Russia in particular, says: “After reading some scores of Russian reports and pamphlets and many articles in Russian medical journals, the impression left on my mind is that, so far as the recent epidemic in Russia is concerned, there were numerically more persons who contracted cholera by direct and unguarded intercourse with the sick than by means of drinking water, and that the poison of cholera was less often introduced into a new locality, and less often spread in that locality, by means of water than by persons suffering from the disease by careless contact of the healthy with the sick, and by articles that had been soiled by the dejecta of the sick.” But although he acknowledges water as the frequent cause of spread, he disclaims asserting that it will explain all that is obscure in connection with the disease. “It will not explain why cholera is one year confined to India and another year spreads to half the civilised globe. It cannot account for every village or town in which cholera occurs.”†

Then, again, until the year 1890, influenza was unknown in India, and, before 1889, perhaps in Asia. What accounts for its origin, virulence and spread in pandemic form throughout India and indeed the world? Inter-communication alone cannot, although eminently communicable by air and water, for this was a great deal better during the Afghan war and yet we had neither influenza nor cholera. If the extra rapid multiplicity of the “bacillus” could account for it, what were the extraordinary favouring conditions? Meteorology apparently fails to answer? And yet in the domain of meteorology, and that of botany or

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\* Notes on the transmission of cholera. Trans. Int. Cong. Hyg. 1891, Vol. I page 47.

† Spread of cholera by water. *B. M. J.*, 13th October 1891.

zoology, will very probably be found solutions for many of these problems that at present alarm the ignorant and confound the wise.

We now return again to Quarantine and ask—Is it never advisable? The ultramontane anti-Quarantine party contend that Quarantine can never, under any circumstances, be justifiable, for the simple reason that cholera cannot be kept out of a country because it is communicable by, let us say, “aërial waves” (or aërial currents) which necessarily supersede and abort all such efforts of man; and that therefore our only refuge and hope lie in a good water-supply and thorough sanitation. That there is enough ground for this contention I have already shewn. But that this is the whole unexpansible truth is open to question. I am no general upholder of rigid quarantine with its cordons and police, its dodges and evasions, its false sense of security and its neglect of hygiene and sanitation; but I decidedly incline to the opinion that under certain circumstances, a modified Quarantine is often perfectly effectual in arresting the advance of disease, even into a sanitarily defective locality. Although this protection is not always evident, it yet occurs frequently enough to demand introduction wherever practicable. Such has been more or less the time-worn practice in India, with our army, our cantonments, our jails, and our municipalities. And experience has not proved us false. This modified quarantine is by no means intended, nor in practice is it used, to supersede hygiene and sanitation; in our first three examples they are nowhere, perhaps, in the world, more strictly enforced—but it is an *additional precaution* of great value that the special exigencies of the case demand, and much responsibility is incurred by those who decline to accede to the dictates of our past experience. In India and the East, particularly, we are bound to take these precautions, as it would be absurd to rely solely on sanitary and hygienic improvements; for we live in a country where they do not exist, and among a people ignorant of the simplest principles of cleanliness. Were we then to

wait, with folded arms, until our towns and cities were cleansed and sanitated, and until over population learned to distinguish between idle ceremonial and effectual personal purification, we should have to evacuate the country as an uninhabitable land. And, as a matter of fact, there is no nation on the globe that does not uphold some system, however modified, of the principle of Quarantine.

The following propositions, therefore, may be enunciated. I propose these, with all due diffidence, as they have been modified from those laid down by the Australasian Sanitary Conference of Sydney, N. S. W., in 1884:—

(1). *The degree of protection which Quarantine can afford is inversely as the ease of communication and amount of traffic between the infected country and the country to be defended.*

(2). *Quarantine can best yield a protection commensurate with its cost, only to countries whose internal sanitation is good, and in proportion to the perfection of the same.*

(3). *Countries suffering under defective sanitation may also frequently be more or less completely protected by efficient measures of Quarantine.*

(4). *The function of Quarantine, if it cannot exclude infection, is to lessen the entering number of foci of infection and to take instant measures to isolate, and arrest their diffusion, when entered.*

(5). *Countries whose internal organisation is not perfect cannot afford to defer the observation of suspects to the country at large.*

Surgeon-General CUNNINGHAM has said: "No case can be adduced in which the exemption of any country can be proved to have been due to Quarantine, or, admitting that in a case of this kind absolute proof is difficult and perhaps impossible, no instance can be adduced in which there are good grounds for believing that such exemption has been due to quarantine."\* With all

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\* Mode of preventing the spread of epidemic disease.—Int. Cong.

humility before so eminent an authority I believe I can adduce at least one instance.

In 1892, after the Hardwar *Melâ*, cholera spread throughout India, and, extending into Afghanistan and Persia, assumed pandemic proportions as it progressed throughout Europe. I was medical officer of the Mushkaf-Bolan Railway in course of construction, and some 6,000 to 7,000 coolies were collected for work along 18 or 20 miles in the Upper Bolan Valley. The Bolan Pass is about 60 miles long. Even before the Hardwar fair cholera was prevailing in Persia and in Kandahar. On the 25th April 1892, cholera broke out among a camp of, I think, 400 or 500 railway coolies at Mudgorge in the Pishin Valley, and some deaths occurred. Special precautions were taken, and coolies from the affected locality were prevented access to Quetta, and it did not spread there. Cholera began also to prevail in the villages beyond the eastern entrance into the Bolan Pass in the first and second weeks of April (as I discovered), and afterwards spread among the nomad Bruhi encampments thereabouts, causing many deaths. On the 21st April, cholera was imported into the Bolan by a Bruhi *reis*, who however made his exit out of the pass towards Khorasan by the Gesthari route at the mouth of the Upper Pass. I heard the villagers had placed his camp in quarantine, and he had had several deaths. There were no coolie encampments within 14 miles, so they were not affected. But, on or about 26th April, harvesting Bruhis had infected a couple of large villages (named Kirta) in the Lower Bolan, where, up to 15th June, about 55 cases with 42 (or 76 per cent.) deaths occurred. At the mouth of the Upper Bolan five cases and five deaths occurred. In the Lower Bolan generally, altogether (from Pirehowki to Bibi Nani), including those within the mouth of the Upper Bolan, some 92 cases were recorded with 63 or 68·4 per cent. deaths, and these in rather a scanty population. On the 26th May, a case in a hospital subordinate, who had been ordered on duty, was imported into Ilirok, in the centre of the Upper Pass, from



Kirta, and another on the 17th June, by train from Sibi. As I was on the spot both were promptly isolated and every precaution taken, and the disease did not spread. They recovered. By special police arrangements I ascertained, as far as the limited organisation could in non-British territory, that, in 32 villages or stations from the 25th April, the total number of cholera cases on the Sibi-Hirok Railway line and villages immediately around the eastern end of the Bolan, amounted to 453 with 320 or 70·6 per cent. deaths. The epidemic extended up to 2nd July, that is, for three months. On the 28th April the Pass was blocked. All travellers coming up the Bolan were reported to have been stopped and directed to go by some other route; but Bruhis from the infected villages, including Kirta, were not all removed from the Bolan until the 6th of May, several of them in earavans being turned back even from the Upper Bolan, on my representations to that effect. That it was true cholera with numerous seizures among a scanty population, I satisfied myself by personal visits to numbers of the cases throughout the Bolan. This rigid exclusion from the Pass, especially the Upper Pass, where the coolie camp existed, proved entirely and completely successful. Not only did no case (other than the two importations) occur in the Bolan here, but none was imported into Quetta, a considerable town and the second largest military cantonment in India, nor into the Quetta District. And this, too, considering the circumstances, was very remarkable, for this year was a notably pandemic year. From what I could ascertain cholera was more extensively and virulently prevalent among the Bruhis and villages than in the year before. There was a far greater assemblage of Afghan, Punjabi and other coolies in the Pass (by no means clean people) than in previous years; and the year before, a probably less inviting and certainly less generally epidemic year, not only had cholera penetrated into Quetta, but caused heavy mortality even among the European troops, so much so that SIR ROBERT SANDEMAN had recorded his belief



that the mortality that year had been the highest on record in Beluchistan (British and agency), and there were reasonable apprehensions of a return in the following year, 1892, when, with the opening of the Bolan works, of course, more favourable circumstances were to prevail. Of course in the Pass sanitary precautions, as far as possible, were in force, and the water-supply, although from numerous open springs, was, in great part, in the higher Pass, also protected by conveyance in pipes. But these do not detract from the prominent facts already stated. Indeed, the water-supply of Quetta is also very good, though the cantonment suffered so heavily the year before.

I. Thus I claim that through Quarantine measures, under peculiarly inviting conditions, with a preparatory epidemic the year previous, and in a pandemic year of great virulence, an important part of British and agency Beluchistan was effectually protected from cholera. And not only this: that, in contradiction to reports to the contrary, the Bolan Pass and probably the Khojak, which it feeds, must be held on this pandemic occasion innocent of the advancement of cholera towards Kandahar and Afghanistan, and thence through Persia to Europe.

II. I may, I think, also instance the entire protection of the Samana Garrison (of 3,500 troops and 3,000 followers, on the Miranzai Hills) after the expedition of that name, in the summer of 1891, although some half-dozen cases did occur in the valley camps on which they solely depended for communication and supplies. I was medical officer in charge of the latter, and modified Quarantine measures were adopted on convoys from cholera-stricken Kohat, and effectual steps taken to prevent importation of the disease hillwards.

III. A more recent instance is the Midnapore Central Jail, population 900, of which I am medical officer since end of 1893. This year (1884) various important sanitary and other improvements have been effected, and I have besides instituted, as far as practicable, special Quarantine-like isolation measures on new

prisoners, besides careful supervision of town supplies, to minimize the possibility of importation of infectious disease. The results are given below compared with the adjoining town of 32,000 inhabitants:—

Years.	CHOLERA CASES		CHOLERA MORTALITY		TOTAL MORTALITY	
	Town.	Jail.	Town.	Jail.	Town.	Jail.
1890.	Unknown, pro-	2	63	nil.	805	38
1891.	bably 70 per	1	125	nil.	1,248	23
1892.	cent. of the	15	454	8	1,378	52*
1893.	number of the	6	33	2	981	56†
1894.	cases died.	nil.	182	nil.	1,301	42

The last two instances are, however, founded on reasonable presumption.

The case of Beluchistan is, I think, established.

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\* Prisoners moved into cholera camp.

† There were besides numerous choleraic diarrhoea cases (non-fatal).







